AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1 (currently amended): A method for locating an element of interest contained in a three-dimensional object comprising :

providing a set of images having at least first and second digitized stereotaxic images having positions of homologous regions of interest corresponding to the element of interest and appearing in the set of stereotaxic images;

selecting in a first stereotaxic image a first target region of interest having a target pixel;

matching the first target region of interest with a second region of interest homologous to the first target region of interest and appearing in the second stereotaxic image~~region of interest;~~

~~matching a~~ generat~~ed~~ing a target window of chosen dimensional characteristics and containing the selected first target region of interest around pixels of the selected target pixel;

~~applying a correlation process to the pixels in windows of the set of stereotaxic images corresponding to the first and second regions of interest and applying a correlation process between the windows;~~

selecting~~determining~~ a set of pixels in the second stereotaxic image according to a predetermined selection criterion so as to generate a second window around each selected pixel, the second window having the same dimensional characteristics as the generated target window ~~around each selected pixel~~;

processing a correlation between ~~the~~ gray-scale levels of the pixels in each second window and the gray scale levels of the pixels in the target window to obtain a correlation for each second window; and

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using the correlation values to identify the region of interest homologous to the target region of interest and thereby minimize the risk of matching error between the homologous regions of interest.

2 (original):   The method of claim 1 wherein the correlation values includes the selection of a certain number of correlation maxima or minima, the homologous region of interest being selected from those for which the associated correlation value is one of the correlation maxima or minima.

3 (original):   The method of claim 2, wherein an analysis of the correlation values obtained includes a determination of the dynamic range of the maxima or minima selected, and the comparison of the dynamic values obtained with a threshold.

4 (original):   The method of claim 1 wherein the correlation processing includes a normalized correlation processing.

5 (original):   The method of claim 1 wherein the correlation processing includes a normalized difference processing.

6 (original):   The method of claim 1 wherein the matching includes a prior filtering of the stereotaxic images.

7 (currently amended): A method for locating an element of interest contained in a three-dimensional object comprising :

providing a set of digitized stereotaxic images having positions of homologous regions of interest corresponding to the element of interest and appearing in the set of stereotaxic images;

selecting in a first stereotaxic image a first target region of interest having a target pixel;

matching the first region of interest with a second region of interest homologous to the first region of interest and appearing in a second stereotaxic image region of interest;

matching generating a generated target window of chosen dimensional characteristics and containing the target region of interest around pixels of the selected target pixels;

determining and storing a first set of numerical values, respectively representing predetermined characteristics of any region of interest for the target region of interest on the basis of the grey-scale values of the pixels in the target window;

determining in the second image a set of pixels belonging respectively to candidate regions of interest appearing in the second image according to predetermined selection criterion;

generating a second window, containing a the corresponding candidate region of interest around each of the selected pixels;

determining and storing a second set of numerical values, respectively representing the predetermined characteristics for each candidate region of interest, on the basis of the grey-scale values of the pixels in the associated second window; and

identifying the region of interest homologous to the target region of interest on the basis of a comparison processing between the first set of numerical values and each second set of numerical values so as to minimize the risk of matching error between the homologous regions of interest.

8 (original): The method of claim 7 wherein the predetermined characteristics comprise shape, contrast or gradient characteristics.

9 (original): The method of claim 7 wherein the comparison processing includes a distance minimization processing between the two sets of numerical values.

10 (original): The method of claim 8 wherein the comparison processing includes a distance minimization processing between the two sets of numerical values.

11 (original): The method of claim 1 wherein an epipolar zone containing at least an epipolar segment relating to the target pixel is determined in the second stereotaxic image and the pixels in the epipolar zone contain the selected pixels.

12 (original): The method of claim 7 wherein an epipolar zone containing at least an epipolar segment relating to the target pixel is determined in the second stereotaxic image and the pixels in the epipolar zone contain the selected pixels.

13 (original): The method of claim 1 wherein the selected pixels are chosen from the pixels in the second image which have a grey-scale level maxima or minima whose dynamic range is greater than a predetermined threshold.

14 (original): The method of claim 7 wherein the selected pixels are chosen from the pixels in the second image which have a grey-scale level maxima or minima whose dynamic range is greater than a predetermined threshold.

15 (original): The method according to claim 7 wherein the matching includes a prior filtering of the stereotaxic images.

16 (previously presented): A method for locating an element of interest contained in a three-dimensional object comprising :

providing a set of digitized stereotaxic images having positions of homologous regions of interest corresponding to the element of interest and appearing in the set of stereotaxic images;

selecting in a first stereotaxic image of a first target region of interest;

selecting in a second stereotaxic image on the basis of a first automatic matching at least one second region of interest which may be homologous to the first target region;

determining the spatial position of a candidate pixel of a candidate element of interest corresponding to the two regions of interest;

determining the position, in a third stereotaxic image, of a projected pixel corresponding to the projection into the third stereotaxic image of the candidate pixel;

providing a second automatic matching between the target region of interest and a vicinity of the projected pixel; and

defining a projected region of interest so as to minimize the risk of matching errors between the homologous regions of interest.

17 (original): The method of claim of claim 16

wherein the selecting in the second stereotaxic image is on the basis of the first automatic matching a set of second regions which may be homologous to the target region;

determining the spatial position of each candidate pixel corresponding to each pair of regions of interest which is formed by the target region and one of the second regions;

determining the spatial position in the third image of each corresponding projected pixel; and

performing the second automatic matching between the target region and a vicinity of each projected pixel.

18 (previously presented): The method of claim 17

wherein the set of second regions obtained is ordered in the decreasing order of their probability of being in the region homologous to the target region;

wherein the set of projected regions obtained is ordered in the decreasing order of their probability of being the region of homologous to the target region to form a list of correlated values ranked in decreasing order; and

wherein the region homologous to the target region is selected as being the one based upon such ranking.

19 (original): The method of claim 16 wherein the first automatic matching is a correlation processing matching.

20 (original): The method of claim 16 wherein the second automatic matching includes a correlation processing matching between the vicinity of each projected pixel and a target window containing the target region of interest.

21 (original): The method of claim 16 wherein the second automatic matching includes a comparison matching between the target region of interest and each projected region of interest.

22 (new): The method of claim 1, wherein the matching comprises the generating of a target window, the selecting of a set of pixels, the processing of a correlation and the using of the correlation values.